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(54) Personal body dryer

(57) A device to facilitate the drying of the 'Human Body,' at the touch of a control.

This is made possible as air is heated when drawn through a fan/heat unit, it is then directed to the desired body areas by being channelled through a non electrically conductive heat proof material.

For the first time it is possible with this invention to dry hair in the confines of the bath by means of a flexible extension attached to the main system.

The fan/heat unit is mounted outside the bathroom complex thus producing complete electrical safety.

Fast and effecient body drying is achieved, as heated air is directed over body, therefore rendering large bathroom towels redundant.

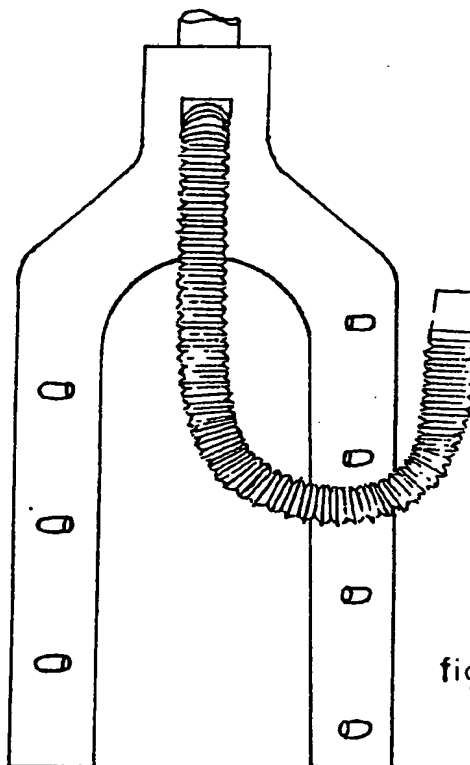
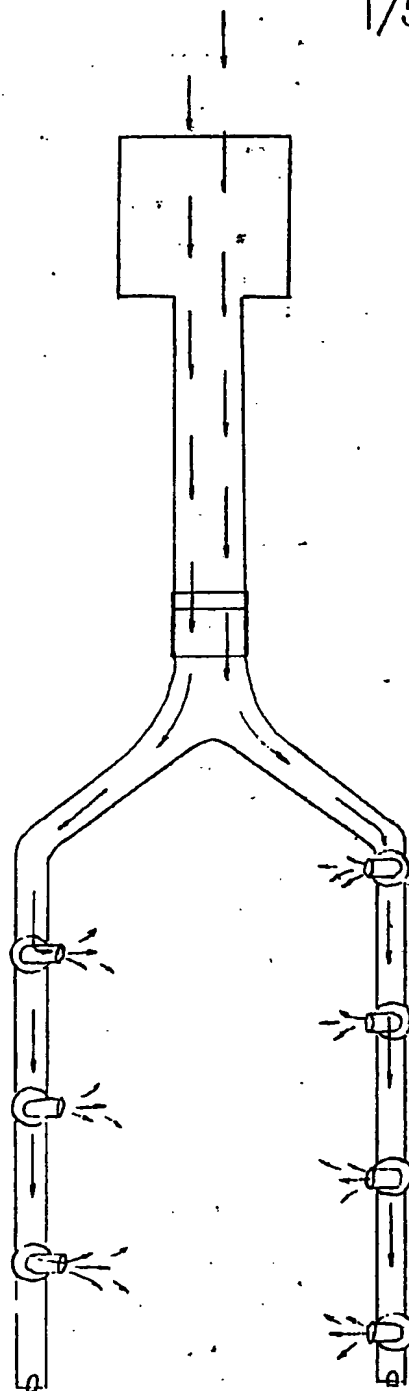


fig 1

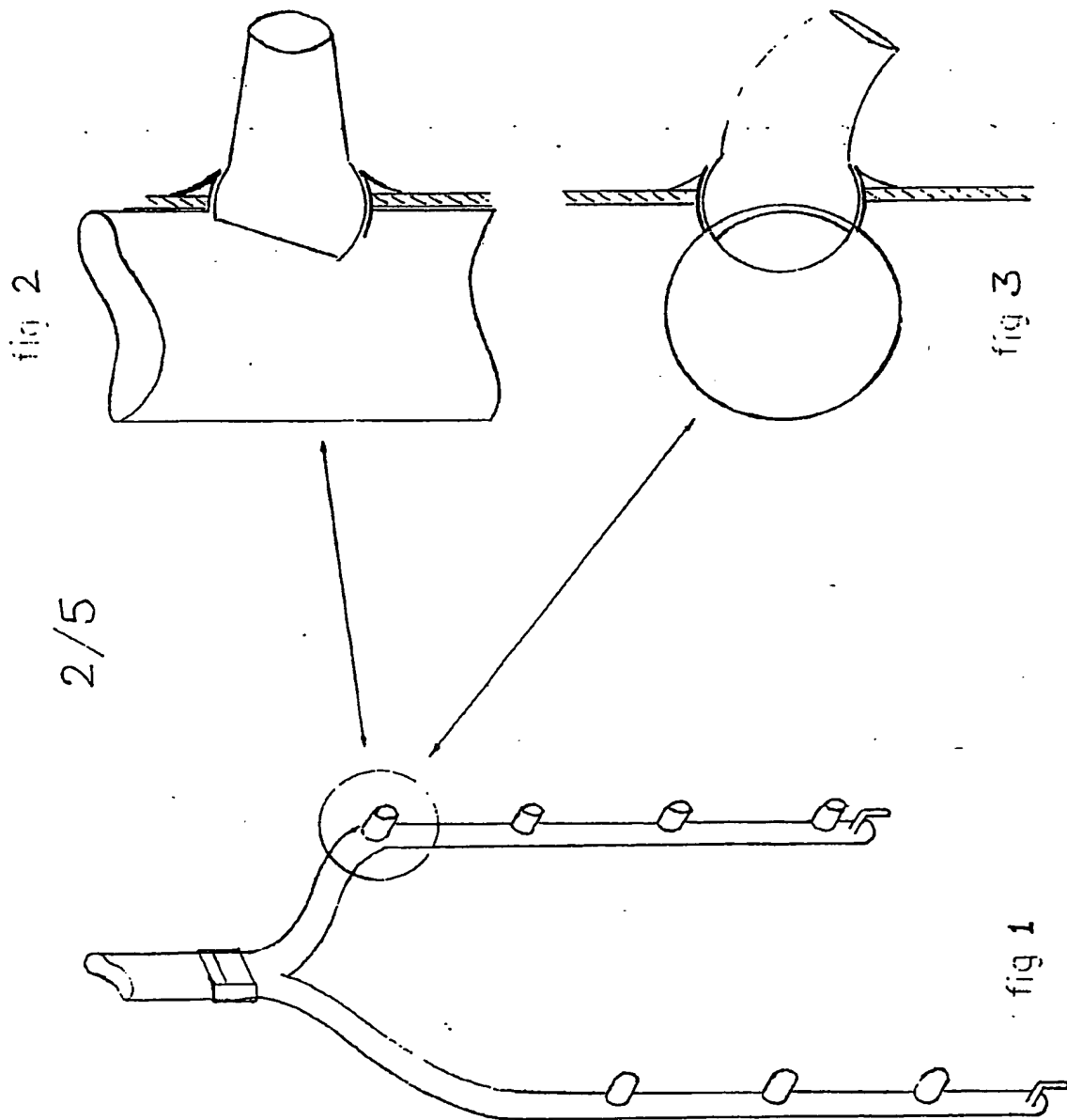
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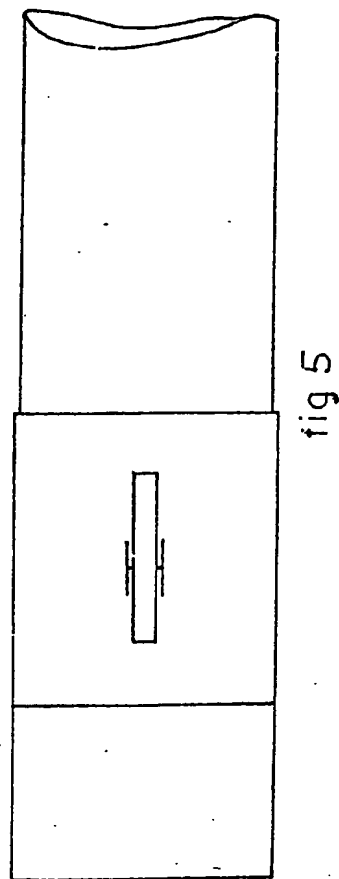
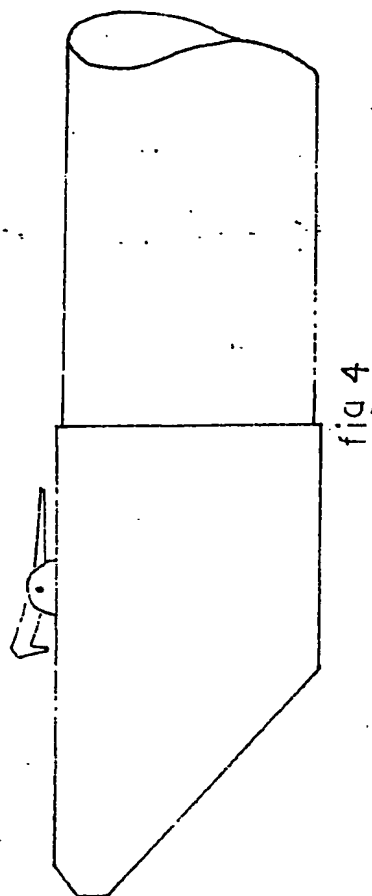
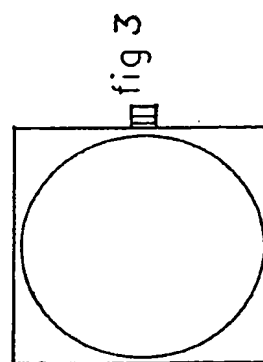
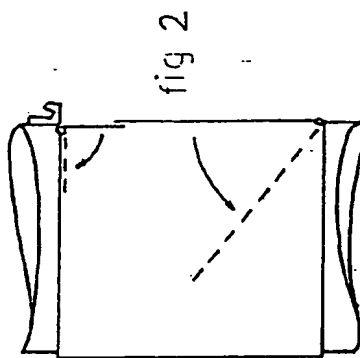
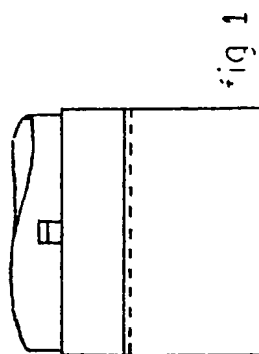


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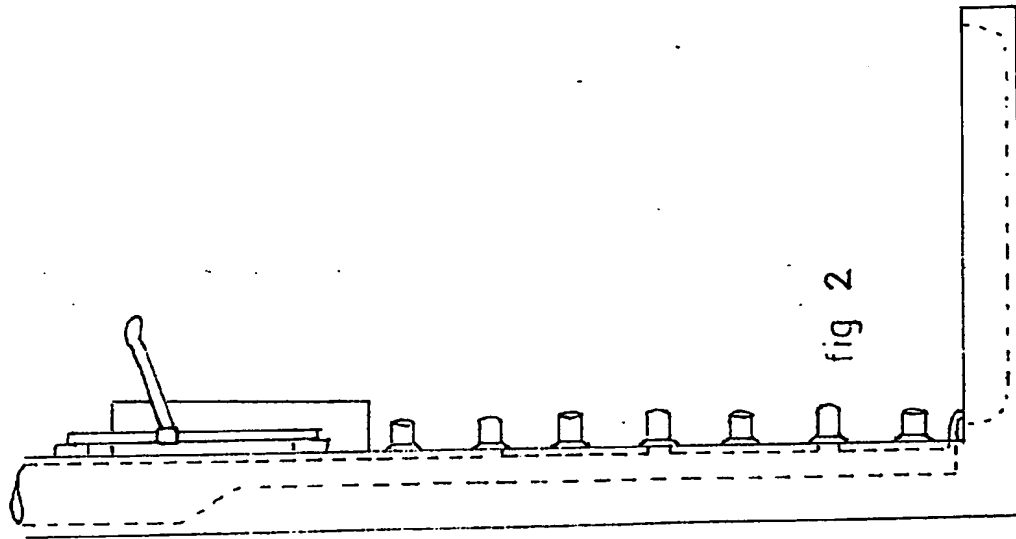


fig 2

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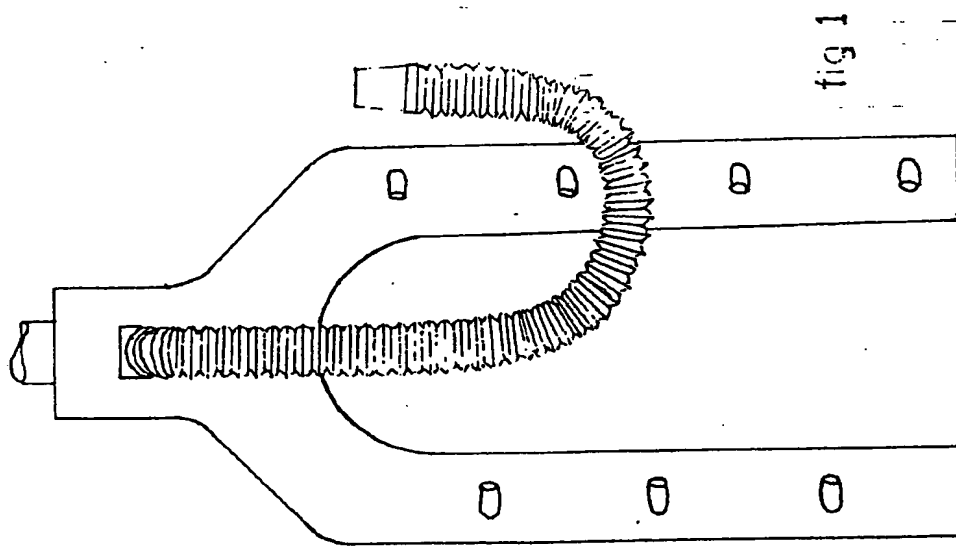
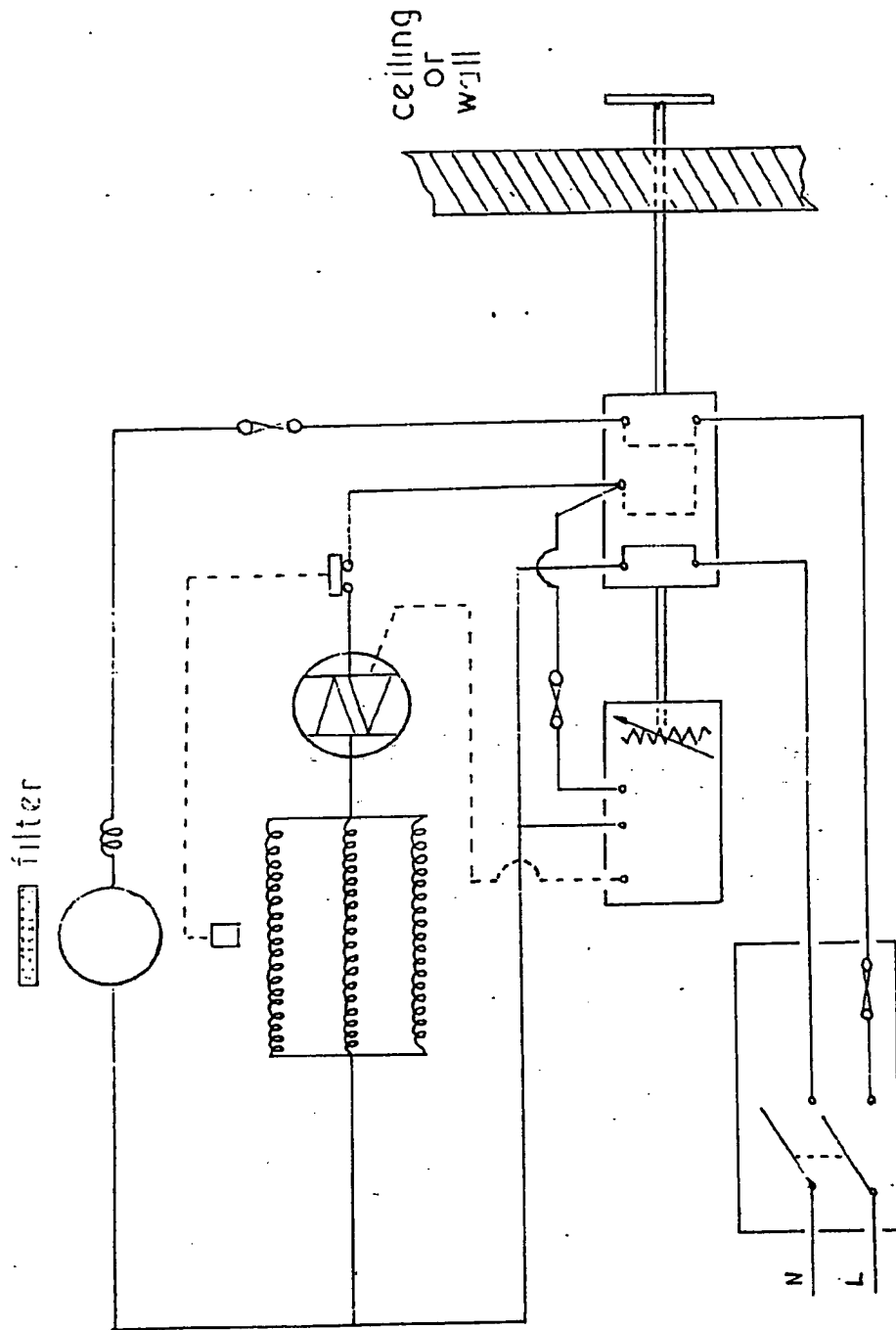


fig 1

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SPECIFICATION

Personal body dryer

- 5 Air is drawn into the system by a fan, heated to a safe and controllable temperature, passed through associated pipe-work into the drying area. Air is then channelled to selected body areas, via suitable outlets. See drawings 1/5 and 4/5 figures 1.2.

- 10 Due to the dangers associated with electricity, and the use of, within the confines of the bathroom, our invention gives COMPLETE ELECTRICAL SAFETY. This is achieved by mounting the fan heat unit outside the complex of the drying area. Tubes, nozzles and the control device all have complete electrical isolation. Our invention maintains the high safety standards even under adverse levels of steam and condensation. So electrically safe is our invention, the user can dry his or her hair, if so desired whilst still in the bath.

- 15 A filter is positioned on the inlet side of the fan/heat unit to ensure that only clean air is passed through the heated electrical element.

The air then flows through pipe-work made up of a non inflammable, electrically insulated material to the top of the Body Dryer.

- 20 As the air enters the junction see drawing 1/5 it is divided equally down the tubes.

- 30 As shown in drawing 2/5 figures 2.3 a number of adjustable swivelled nozzles are fitted at equal and/or variable distances or heights along the tubes. The nozzles, allow the user to direct air, as and if required to specific parts of the body.

- 35 Fitted before the junction of the two tubes is a self sealing orifice valve, see drawing 3/5 figures 1.2.3. The purpose of this is for the fitting of a connection, see drawing 3/5 figures 4.5., when fitted it diverts the air flow away from the nozzle outlets, and allows air flow through the flexible hose, thus allowing the user to facilitate in drying selected parts of the body, away from the main system. On removing the connection the unit reverts back to its normal condition.

- 40 The control of the fan/heater is achieved by operating a handwheel/lever, as shown in drawing number 5/5. This device is fitted either in the cabinet or on the wall of drying area, it is connected by a ridged or flexible drive made of a non electrical conducting material to the fan/heat unit. The user has complete control through from cold to a safe maximum temperature.

- 50 The element control is achieved by using a triac, and the associated gate circuit. The potentiometer, which is mechanically linked to the on/off switch, will carry out this requirement. For additional safety a thermal cut out device is fitted, this gives full protection from overheating.

- 60 When the Body Dryer is used within the confines of the bathroom the fan/heater unit

must either be fitted to the outside of an internal facing wall, or above ceiling level.

CLAIMS

- 70 1. What we claim is a device for drying the whole of the body. By having a fan/heat unit placed away from the drying area, and allowing a controllable heated air flow to be channelled through a non electrically conductive heat proof material, into the drying area.
- 75 Depending on which mode the user requires, air can either be channelled to the nozzle outlets or allowed to flow through an extended flexible air way.
- 80 2. A body dryer as claim 1 fitted into a purpose built shower cabinet.
3. As claim 1 but built into an existing shower cabinet.
- 85 4. As claim 1 but built into a purpose built body drying cabinet.
5. A body dryer as claim 1 made without a cabinet.
6. As claim 5 but fitted directly to the wall.
- 90 7. A body dryer as claim 1 made with any number of air ways.
8. As claim 7 but fitted with any number of nozzles.
9. As claim 8 fitted with fixed or moving nozzles.
- 95 10. A body dryer as claim one made with or with a flexible air channel.
11. As claim 10 with flexible air channel designed to take personal attachment.
- 100 12. As claim 1 but with a controllable air flow.
13. A body dryer made as claim 1 but with cold air blowing facilities.

105 CLAIMS (14 May 1984)

1. What we claim is a device for drying the whole of the body. By having a fan/heat unit placed away from the drying area, and allowing a controllable heated air flow to be channelled through a non electrically conductive heat proof material, into the drying area. Depending on which mode the user requires, air can either be channelled to the nozzle outlets creating an all over drying effect or allowed to flow through an extended air way, thus directing the air to selected parts of the body.
- 110 10. A body dryer as claim one made with a self sealing orifice valve, allowing the air to be diverted from the nozzle outlets into an extended air way.
11. As claim 10 with extended air way designed to take personal attachment.

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(54) Drying and Treatment Cubicle

(57) A drying and treatment cubicle is described which can be used either simply as a drying cubicle or as a total treatment cubicle for treatment by infra red and ultra violet radiation, washing and drying. The unit is of particular application in institutions such as hospitals and schools and is of particular use in connection with handicapped people and invalids.

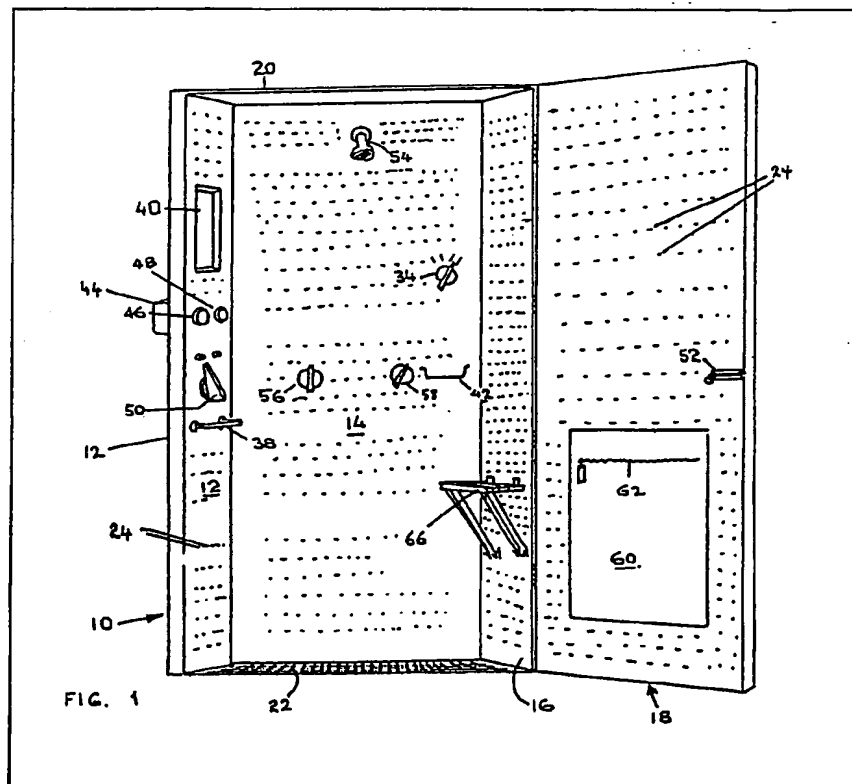
The cubicle (10) has hollow walls (12, 14, 16) a door (18) and where required a roof panel (20) and floor panel (22). A separate enclosure (26) has a fan (28),

an electric motor (30) and one or more electrical heating elements (32) to produce a warm draught of air. Each of the fixed wall panels includes apertures (24) through which the hot air can be blown.

Control means including thermostatically controlled switch means (34) are located within the cubicle.

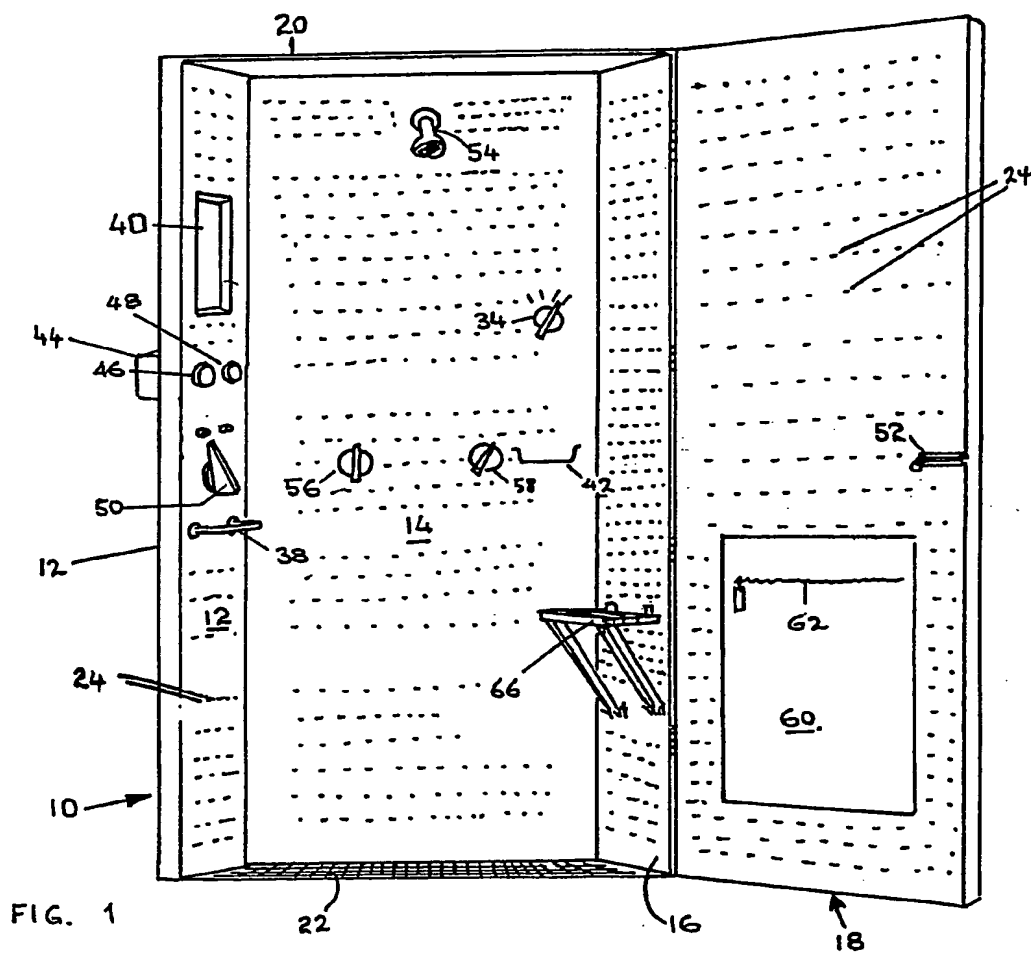
For treatment purposes a second enclosure (44) has infra red or ultra violet light sources.

Spray nozzle (54) together with hot and cold taps (56, 58) provide the means for showering within the cubicle.



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SPECIFICATION

Drying and Treatment Cubicle

5 Field of invention

This invention concerns drying units particularly for drying the human body after washing.

Background of the invention

10 It is known to provide hand dryers in public places operated by pressing a button or foot pedal and normally adjusted to operate for a specified period of time after each press of the button or foot pedal. Such devices have two advantages.

- 15 (1) They eliminate the need to provide towels and
(2) They eliminate the risk of infection due to multiple use of a common towel.

20 It is also known to provide hair dryers having a housing into which the head is partly inserted, in which air blower and heating means is located to provide a warm draught of air over the head to dry the hair.

25 It is an object of the present invention to provide a drying unit which may for example be used in public places such as public swimming baths and hospitals and the like but may also be used in the home and in hotels and other establishments where conventionally the drying of the person after bathing or
30 showering has involved the use of towels of one form or another.

The invention

35 According to the present invention a treatment unit comprises a cubicle in which a person can stand or sit, fan means, heater means for warming the air blown by the fan means, duct means for conveying the blown and warmed air around the cubicle and aperture means in at least one wall of the cubicle
40 through which the warm air can pass to dry the person within the cubicle.

Preferably one of the walls of the cubicle is in the form of a door which can be hinged or slid to the side to allow access to the interior of the cubicle.

45 The term wall as previously used includes vertical walls, a ceiling (if provided) and or a floor (if provided) and also includes a part of any such parts of the cubicle.

50 Preferably the cubicle includes a seat which may be hinged to allow it to be folded down or permanently in position. The seat is preferably apertured to allow the passage of air therethrough.

55 Preferably the fan and heater unit are contained within a housing attached to and/or forming an integral part of the cubicle. Alternatively the fan and heater unit may be in a separate housing which can be connected to a suitable inlet in the cubicle by means of a duct member, which may be flexible, for conveying warmed air from the fan and heater unit to
60 the cubicle.

65 Preferably the heating means comprises one or more electric heating elements located in the output path from the fan. Preferably thermostatic switch means is provided for automatically cutting off the flow of electric current to the heating elements in the

event that the temperature of the air supplied to the cubicle exceeds a given temperature.

70 Preferably means is provided for controlling the speed of operation of the fan and the amount of heating produced by the heating means and/or the temperature to which the air can be raised by the heater before the heating means is shut off.

In this way the force of the air blast and the temperature of the same can be controlled by the user of the cubicle to conform to the particular requirements of the user for the time being.

75 According to a particularly preferred feature of the invention the drying cubicle is fitted with an ultra violet sun lamp or an infra red lamp or both and separate controls are provided for providing electric current to operate one or the other. Preferably all controls are located within the cubicle and to avoid wasted power an interlock may be provided so that the controls only become operational when the door
85 has been shut and secured from the inside by means for example of a bolt.

Preferably all the devices associated with the cubicle are controlled through fail safe time operated switches which inhibit the continued operation of various facilities within the cubicle after a given
90 period of time to prevent dangerous over exposure to hot air or ultra violet or infra red rays or the like where these are provided.

95 As a further refinement alarm means may be provided which will sound a given period of time after the automatic timing switches have switched off the facilities in the event that the cubicle door has not been opened. Thus in the event that a person using the cubicle faints or passes out or is other wise
100 taken ill, an alarm will be raised shortly after the drying or other treatment has been given indicating that the person has not yet made an attempt to leave the cubicle.

105 According to a further preferred feature of the invention the cubicle may be further fitted with a shower nozzle and associated plumbing and water flow and temperature controls to allow the user first of all to shower and after turning off the shower to dry himself by turning on the drying fan etc. It will be seen that this will obviate the need for towels and could considerably cut down on laundry costs in establishments such as hospitals and hotels and institutions such as boarding schools where hitherto conventional towelling has always been used for
115 drying purposes.

Where a shower nozzle is included in the cubicle, water-proof storage means is preferably provided within the cubicle for storing the person's clothing so that a person can enter an empty cubicle, close the door, disrobe, shower, dry himself and then dress himself again without the need to leave the cubicle.

120 It will be seen that the unit has particular application for handicapped people particularly those unable to leave a wheel-chair. By providing a non-corrosive chair unit into which a handicapped person can be seated, the person can be wheeled into a cubicle lightly covered over with a blanket and after removing the blanket and storing this in a water-proof compartment within the cubicle, the door can
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be shut and the person allowed to shower in privacy and then dry himself in privacy before once again calling for the attendant. Hitherto the bathing and showering of handicapped persons particularly those confined to wheelchairs has typically involved two or more attendants usually in attendance at all times in case the person slips in the bath or needs urgent attention.

According to a further preferred feature of the invention means may be provided for masking off some of the aperture means so as to allow either the lower or mid or upper regions of the body to be dried more or less than other regions. This is particularly advantageous where hairdrying is concerned since it will be appreciated that the skin will be dried relatively quickly and a considerably longer period of time will be required for the hair to be dried using the same principle. By incorporating either louvre means or shutters or other devices for shutting off some or all of the apertures or by providing a second set of apertures supplied by a second fan unit which by suitable louvre means can be directed onto the head and hair of the person concerned so the hair can be subjected to a drying air stream for longer than the rest of the body without discomfort being experienced by the person concerned who might otherwise become very dry and unpleasantly hot.

According to further refinements, vanity devices such as mirrors and shelves for such things as nail scissors and other manicure devices may be provided within the cubicle.

Where the unit is to be fitted within a hotel or public place such as swimming bath, a coin freed-mechanism may be provided and the unit may be rendered inoperable until selected coins have been inserted into the coin freed-mechanism. Typically the coin freed mechanism controls the opening of the door.

The invention will now be described by way example with reference to the accompanying drawing.

In the drawings

Figure 1 is a perspective view of a cubicle embodying the invention with the door open to reveal the interior of the cubicle, and

Figure 2 is a plan view of the cubicle shown in Figure 1 with the roof panel removed, to reveal the hollow wall construction of the cubicle.

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Detailed description of the drawings

Referring to Figure 1, a cubicle generally designated 10 includes wall panels 12, 14 and 16, a door panel 18, an optional roof panel 20, and optional floor panel 22. The door panel 18 is hinged to the vertical edge of the wall panel 16.

All three fixed wall panels include apertures such as designated 24 in their internal surfaces through which hot air can be blown and to this end an enclosure 26 is mounted on the side wall 16 which contains a fan 28, an electric motor 30 for driving the fan and one or more electrical heating elements such as 32.

Although not shown in detail, an electrical circuit is provided for supplying electric current to operate

the fan and the heating elements and thermostatic switch means is provided for removing electric current at least from the heating elements in the event that the temperature within the cubicle exceeds a given design temperature or a temperature set by an adjustable control such as 34 situated within the cubicle.

Although not shown in detail, a filter 36 is provided to filter air entering the enclosure 26 and although not shown louvres may be provided within the cubicle for differentially closing off or directing the air leaving the apertures 24 so as to produce greater drying in one region than another within the interior of the cubicle.

The inside of the cubicle includes a handrail 38 and a mirror 40 together with at least one tray on which manicure equipment and the like can be located.

In addition a second enclosure 44 houses an infra red light source and an ultra violet light source (neither of which is shown) and apertures 46 and 48 allow radiation from one or the other of the two lamps to enter the cubicle. A selector switch 50 is provided for selecting between one or the other of the two radiation sources and a timing switch (not shown) is provided for controlling the duration of the dose of radiation from the selected source. To reduce the risk of unwarranted exposure and unauthorised use for example by children, a lock or a key switch may be provided so that the radiation lamps can only be operated by an authorised person.

As shown in Figure 1 the door 18 includes a bolt 52 which when shut (with the door 18 closed) not only secures the door in its closed position but also operates electrical switch means which renders all the electrical circuits associated with the cubicle inactive until it has been operated. In this way it is not possible to leave the cubicle under normal circumstances with any of the equipment functioning since the moment the door is opened, all the equipment is stopped irrespective.

In accordance with a preferred feature of the invention a spray nozzle 54 is provided together with associated plumbing (not shown) taps such as 56 and 58, serving to control the flow and temperature of water from the nozzle 54. In this arrangement the floor is typically in the form of a grid as shown in Figure 1 and drainage is provided therebelow to allow water which drains down onto the floor to drain away.

Where the water supply to the nozzle 54 is pressurized by means of an electrically powered pump, the electrical supply to the pump is preferably also controlled from the master switch operated by the bolt 52 so that the cubicle cannot be left with the shower running.

Where a shower unit is incorporated into the cubicle a waterproof pocket is conveniently provided on the interior of the door such as shown at 60 access to which may be gained through a waterproof zip fastener 62 or the like.

Where the internal surface of the door is also to include apertures 24 as shown in Figure 1, flexible ducting 64 connects the hollow interior of the door 18 to the hollow interior of the walls 12, 14 and 16.

Also shown in Figure 2 as well as in Figure 1 is a

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seat 66 The latter is slatted and can be hinged down so as to occupy the minimum of space within the cubicle when not in use.

5 CLAIMS

1. A treatment unit comprising a cubicle in which a person can stand or sit, fan means, heater means for warming air blown by the fan means, duct means for conveying the blown warmed air around the cubicle and aperture means in at least one wall of the cubicle through which the warm air can pass to dry the person within the cubicle.

2. A treatment unit claimed in claim 1 in which one of the walls of the cubicle is in the form of a door which is hinged or is slideable to the side to give access to the interior of the cubicle.

3. A treatment unit claimed in claim 1 or 2 further comprising a seat therewithin.

4. A treatment unit as claimed in claim 3 in which the seat is hinged to allow it to be closed down.

5. A treatment unit as claimed in claim 3 or 4 in which the seat is apertured to allow the passage of air therethrough.

6. A treatment unit as claimed in any one of claims 1 to 5 in which the fan and heater unit are contained within a housing attached to or forming an integral part of the cubicle.

7. A treatment unit as claimed in any one of claims 1 to 5 in which the fan and heater unit are in a separate housing which can be connected to a suitable inlet in the cubicle by means of a duct member for conveying warmed air from the separate housing to the cubicle.

8. A treatment unit as claimed in claim 7 in which the duct member is flexible.

9. A treatment unit as claimed in any one of claims 1 to 8 in which the heating means comprises one or more electric heating elements located in the output part from the fan.

10. Treatment unit as claimed in claim 9 further comprising thermostatic switch means for automatically cutting off the flow of electric current to the heating elements in the event that the temperature of the air supplied to the cubicle exceeds a given temperature.

11. Treatment unit as claimed in any of claims 1 to 10 further comprising means for controlling the speed of operation of the fan and the amount of heating produced by the heating means and/or the temperature to which the air can be raised by the heater.

12. The treatment unit as claimed in any one of the preceding claims further comprising ultra violet lamp means together with control means for controlling operation thereof from at least within the cubicle.

13. Treatment unit as claimed in any one of claims 1 to 12 further comprising an infra red lamp and control means for controlling the operation thereof from at least within the cubicle.

14. Treatment unit as claimed in claim 12 or claim 13 further comprising an interlock between a lock or bolt on the door and the power supplied to the ultra violet or infra red or both lamps so that the

latter only become operational when the door has been shut and secured from inside.

15. A treatment unit as claimed in any one of the preceding claims further comprising fail safe time operated switches which inhibit the continued operation of the different facilities within the cubicle after a given period of time to prevent over exposure to hot air or ultra violet or infra red rays.

16. A treatment unit as claimed in any of claims 12 to 15 further comprising alarm means for sounding alarm after a given period of time after the automatic timing switches have turned off the facilities within the cubicle, in the event that the cubicle door has not been opened.

17. A treatment unit as claimed in any one of the preceding claims further comprising a shower nozzle and associated plumbing and hot and cold water flow controls to allow a shower to be taken within the cubicle first after which the shower can be turned off and the drying and other treatment facilities where provided, rendered operational.

18. A treatment unit as claimed in claim 17 further comprising waterproof storage means within the cubicle into which the users clothing can be put.

19. A treatment unit as claimed in any one of the preceding claims in combination with a non-corrosive chair unit adapted to be moved into and out of the cubicle.

20. A treatment unit as claimed in any one of the preceding claims further comprising means for masking off some of the apertures in the walls of the cubicle so that some parts of the body can be dried for longer than other parts.

21. Treatment unit as claimed in claim 20 when the said means for masking off the apertures comprises louvres or shutters.

22. A treatment unit as claimed in any one of the preceding claims further including a coin freed-mechanism for controlling access to the cubicle or inhibiting the operation of the facilities within the cubicle until the appropriate coins have been inserted into the coin freed mechanism.

23. A treatment unit constructed arranged and adapted to operate substantially as herein described with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.

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